

Amendments to the Claims

This listing of the claims will serve to replace all prior versions, and listings, of claims in the application:

Listing of Claims:

--1. (currently amended) A high impact game ball comprising:

a core structure comprising a spherical member with an outer surface;

a spherical casing concentrically disposed ~~relative to~~ to envelop the spherical member of the core structure wherein the spherical casing has an inner surface and an outer surface;

at least one surface deviation disposed relative to the outer surface of the spherical member of the core structure;

at least one corresponding surface deviation disposed relative to the inner surface of the spherical casing in a mating relationship with the at least one surface deviation disposed relative to the spherical member of the core structure whereby the at least one surface deviation and the at least one corresponding surface deviation are interposed between the spherical member of the core structure and the spherical casing.

2. (previously presented) The high impact game ball of claim 1 wherein the at least one surface deviation disposed relative to the spherical member of the core structure comprises a rigid registration projection and wherein the at least one surface deviation disposed relative to the spherical casing comprises a registration indentation that corresponds to the registration projection.

3. (previously presented) The high impact game ball of claim 2 wherein the registration projection comprises a rigid post that projects from the spherical member of the core structure and into the registration indentation of the spherical casing.

4. (previously presented) The high impact game ball of claim 2 wherein there are a plurality of rigid registration projections that project from the spherical member of the core structure and into corresponding registration indentations of the spherical casing.

5. (original) The high impact game ball of claim 4 wherein each of the plurality of registration projections comprises a metal post.
6. (original) The high impact game ball of claim 1 further comprising a switching arrangement embedded in the spherical member of the core structure wherein the switching arrangement comprises a means for sensing an activation condition relative to the switching arrangement, a means for triggering a response upon an occurrence of the activation condition, and a means for exhibiting the response based on the occurrence of the activation condition.
7. (original) The high impact game ball of claim 6 wherein the means for sensing an activation condition comprises a means for sensing an impact relative to the high impact game ball.
8. (previously presented) The high impact game ball of claim 7 wherein the means for exhibiting a response based on the occurrence of the activation condition comprises a light source for being activated in response to an impact relative to the high impact game ball wherein the light source is activated for a pre-determined time period after the impact.
9. (previously presented) The high impact game ball of claim 7 wherein the means for exhibiting a response based on the occurrence of the activation condition comprises a sound source for being activated in response to an impact relative to the high impact game ball wherein the light source is activated for a pre-determined time period after the impact.
10. (original) The high impact game ball of claim 6 wherein the means for sensing an activation condition comprises a means for sensing a remote activation signal whereby the response can be caused to be exhibited by a remote activation signal.
11. (original) The high impact game ball of claim 10 wherein the means for sensing an activation

condition comprises a means for sensing an infrared activation signal.

12. (original) The high impact game ball of claim 10 wherein the means for sensing an activation condition comprises a means for sensing a sound signal.

13. (original) The high impact game ball of claim 10 wherein the means for exhibiting a response based on the occurrence of the activation condition comprises a light source for being activated in response to a remote activation signal.

14. (original) The high impact game ball of claim 10 wherein the means for exhibiting a response based on the occurrence of the activation condition comprises a sound source for being activated in response to a remote activation signal.

15. (original) The high impact game ball of claim 1 further comprising a plurality of positioning stays wherein each positioning stay has a proximal end coupled to the spherical member of the core structure, a body portion, and a distal end and wherein each positioning stay projects from the spherical member of the core structure an amount substantially equal to a radial thickness of the spherical casing whereby the plurality of positioning stays can ensure a concentric relationship between the spherical member of the core structure and the spherical casing.

16. (original) The high impact game ball of claim 15 wherein each of the plurality of positioning stays comprises a generally rigid strand of material that projects radially from the spherical member of the core structure.

17. (original) The high impact game ball of claim 16 wherein the spherical casing is formed by injection molding.

18. (previously presented) The high impact game ball of claim 1 further comprising a spherical shell

disposed to envelope the spherical casing and the core structure wherein the spherical shell has an inner surface and an outer surface.

19. (previously presented) The high impact game ball of claim 18 further comprising a plurality of interior surface deviations disposed on the inner surface of the spherical shell and a plurality of corresponding exterior surface deviations disposed on the outer surface of the spherical casing whereby relative movement between the spherical shell and the spherical casing is prevented.

20. (original) The high impact game ball of claim 19 wherein the spherical shell has a generally smooth exterior surface.

21. (original) The high impact game ball of claim 19 further comprising a plurality of exterior surface deviations disposed on the spherical shell.

22. (original) The high impact game ball of claim 18 wherein the spherical member of the core structure is formed from a polycarbonate resin under a high pressure injection molding process, wherein the spherical casing is formed from a high density silicone under an injection molding process, and wherein the spherical shell is formed under an injection molding process.

23. (original) The high impact game ball of claim 1 further comprising a lightweight spherical layer with a specific gravity of less than 1.

24. (original) The high impact game ball of claim 23 wherein the high impact game ball has a specific gravity of not greater than 1.

25. (original) The high impact game ball of claim 23 wherein the lightweight spherical layer comprises an aerogel.

26. (original) The high impact game ball of claim 1 further comprising a luminescent layer for enabling the high impact game ball to emit light.

27. (original) The high impact game ball of claim 26 wherein the luminescent layer comprises a sub-layer.

28. (original) The high impact game ball of claim 26 wherein the luminescent layer comprises an outer layer.

29. (original) The high impact game ball of claim 6 further comprising an access conduit with a proximal end adjacent to the switching arrangement and a distal end in communication with an exterior surface of the high impact game ball.

30. (original) The high impact game ball of claim 29 wherein the means for sensing an activation condition relative to the switching arrangement comprises a switch disposed adjacent to the proximal end of the access conduit.

31. (original) The high impact game ball of claim 30 further comprising an elongate probe adapted to be received into the access conduit for triggering the switch of the switching arrangement whereby the elongate probe can be employed to induce an activation condition.

32. (previously presented) The high impact game ball of claim 29 further comprising an elongate probe adapted to be received into the access conduit and a means for passing power through the elongate probe whereby the elongate probe can be employed to provide power to the switching arrangement from exterior to the high impact game ball.

33. (previously presented) A game ball comprising:
a spherical member;

a switching arrangement embedded in the spherical member wherein the switching arrangement comprises a means for sensing an activation condition relative to the switching arrangement, a means for triggering a response upon an occurrence of the activation condition, and a means for exhibiting the response based on the occurrence of the activation condition;

an elongate probe adapted to be received into the access conduit;

a means for passing power through the elongate probe whereby the elongate probe can be employed to provide power to the switching arrangement from exterior to the high impact game ball;
and

an access conduit with a proximal end adjacent to the switching arrangement and a distal end in communication with an exterior surface of the game ball.

34. (original) The game ball of claim 33 wherein the means for sensing an activation condition relative to the switching arrangement comprises a switch disposed adjacent to the proximal end of the access conduit.

35. (original) The game ball of claim 34 further comprising an elongate probe adapted to be received into the access conduit for triggering the switch of the switching arrangement whereby the elongate probe can be employed to induce an activation condition.

36. (canceled).

37. (previously presented) The game ball of claim 36 wherein the switching arrangement further comprises a rechargeable means for retaining power whereby the elongate probe and the means for passing power through the elongate probe can be employed to recharge the means for retaining power.

38. (original) The game ball of claim 33 further comprising a lightweight spherical layer that envelopes the spherical member wherein the lightweight spherical layer has a specific gravity of less

than 1.

39. (original) The game ball of claim 38 wherein the game ball has a specific gravity of not greater than 1.

40. (original) The game ball of claim 38 wherein the lightweight spherical layer comprises an aerogel.

41. (original) The game ball of claim 33 further comprising a luminescent layer that envelopes the spherical member for enabling the game ball to emit light.

42. (original) The game ball of claim 33 wherein the means for sensing an activation condition comprises a means for sensing an impact relative to the game ball.

43. (original) The game ball of claim 42 wherein the means for exhibiting a response based on the occurrence of the activation condition comprises a light source for being activated in response to an impact relative to the game ball.

44. (original) The game ball of claim 33 wherein the means for exhibiting a response based on the occurrence of the activation condition comprises a sound source for being activated in response to an activation condition.

45. (currently amended) The game ball of claim 33 wherein the means for sensing an activation condition comprises a means for sensing a remote activation signal whereby the response can be caused to be exhibited by a remote activation signal comprising a means for sensing an infrared activation signal.

46. (original) The game ball of claim 33 wherein the means for sensing an activation condition

comprises a means for sensing a sound signal.

47. (previously presented) A method for constructing a high impact game ball comprising the following steps:

forming a spherical member to form a core structure wherein the spherical member has an outer surface;

forming a spherical casing to envelop the spherical member of the core structure in a concentric relationship wherein the spherical casing has an inner surface and an outer surface;

forming at least one surface deviation relative to the outer surface of the spherical member of the core structure;

forming at least one corresponding surface deviation relative to the inner surface of the spherical casing wherein the at least one corresponding surface deviation relative to the spherical casing is disposed in a mating relationship with the at least one surface deviation disposed relative to the spherical member of the core structure whereby the at least one surface deviation and the at least one corresponding surface deviation are interposed between the spherical member of the core structure and the spherical casing.

48. (original) The method of claim 47 wherein the step of forming a spherical casing is carried out in an injection molding process and includes cooling the spherical casing by an active cooling method.

49. (previously presented) The method of claim 47 wherein the step of forming at least one surface deviation relative to the spherical member of the core structure comprises forming a rigid registration projection and wherein the step of forming at least one corresponding surface deviation disposed relative to the spherical casing comprises forming a registration indentation that corresponds to the rigid registration projection.

50. (original) The method of claim 47 further comprising the step of embedding a switching arrangement in the spherical member of the core structure wherein the switching arrangement

comprises a means for sensing an activation condition relative to the switching arrangement, a means for triggering a response upon an occurrence of the activation condition, and a means for exhibiting the response based on the occurrence of the activation condition.

51. (currently amended) The method of claim 50 wherein the means for sensing an activation condition comprises a means for sensing a remote activation signal whereby the response can be caused to be exhibited by a remote activation signal comprising a means for sensing an infrared activation signal.

52. (original) The method of claim 50 wherein the means for sensing an activation condition comprises a means for sensing a sound signal.

53. (original) The method of claim 50 further comprising the step of forming an access conduit with a proximal end adjacent to the switching arrangement and a distal end in communication with an exterior surface of the game ball.

54. (original) The method of claim 53 wherein the means for sensing an activation condition relative to the switching arrangement comprises a switch disposed adjacent to the proximal end of the access conduit.

55. (original) The method of claim 54 further comprising the step of providing an elongate probe adapted to be received into the access conduit for triggering the switch of the switching arrangement whereby the elongate probe can be employed to induce an activation condition.

56. (previously presented) The method of claim 53 further comprising the steps of providing an elongate probe adapted to be received into the access conduit and a means for passing power through the elongate probe whereby the elongate probe can be employed to provide power to the switching arrangement from exterior to the high impact game ball.

57. (previously presented) The method of claim 47 further comprising the step of disposing a plurality of positioning stays projecting from the spherical member of the core structure wherein each positioning stay has a proximal end coupled to the spherical member of the core structure, a body portion, and a distal end and wherein each positioning stay projects an amount substantially equal to a radial thickness of the spherical casing wherein the step of disposing the plurality of positioning stays occurs before the step of molding the spherical casing whereby the plurality of positioning stays ensure a concentric relationship between the spherical member of the core structure and the spherical casing.

58. (previously presented) The method of claim 47 further comprising the step of forming a spherical shell disposed to envelope the spherical casing and the core structure wherein the spherical shell has an inner surface and an outer surface.

59. (previously presented) The method of claim 58 further comprising the step of forming a plurality of interior surface deviations relative to the inner surface of the spherical shell and a plurality of corresponding exterior surface deviations relative to the exterior surface of the spherical casing whereby relative movement between the spherical shell and the spherical casing is prevented.

60. (original) The method of claim 58 wherein the spherical member is formed from a polycarbonate resin under a high pressure injection molding process, wherein the spherical casing is formed from a high density silicone under an injection molding process, and wherein the spherical shell is formed under an injection molding process.

61. (original) The method of claim 47 further comprising the step of forming a lightweight spherical layer with a specific gravity of less than 1.

62. (original) The method of claim 47 further comprising the step of forming a luminescent layer for

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enabling the high impact game ball to emit light.--